What is claimed is:

1. An electrosurgical generator for applying output power to a load having an electrical impedance, the output power having an RMS value, the electrosurgical generator comprising:

an impedance measurement circuit electrically connected to the load for producing a measurement indicative of the electrical impedance;

an RF output stage connected to the load for applying output power to the load, the RF output stage having an input for adjusting the RMS value;

a controller electrically connected to the measurement circuit and electrically connected to the input, wherein the controller has means for inducing multiple oscillations of the electrical impedance by adjusting the input in response to the ~~measure~~.

2. The apparatus of claim 1 wherein the multiple oscillations of the impedance occur in the frequency range of one to twenty hertz.

3. The apparatus of claim 1 wherein the output power has an amplitude, and the input adjusts the amplitude.

4. The apparatus of claim 1 wherein the output power has a duty cycle, and the input adjusts the duty cycle.

5. The apparatus of claim 1 wherein the controller has means for terminating the output power when the impedance reaches a threshold.

6. The apparatus of claim 1 wherein the controller has means for terminating the output power after a preset period of time.

7. The apparatus of claim 1 wherein the output power is comprised of an output voltage, and the input adjusts the output voltage.

8. An electrosurgical generator for treating tissue, the electrosurgical generator electrically connected in a circuit with the tissue for applying an output power to the tissue from an output stage, the tissue presenting a variable impedance to the output power, the electrosurgical generator comprising:

an impedance measuring circuit electrically connected in circuit with the tissue for producing a measurement of the variable impedance;

a feedback control system in the electrosurgical generator for adjusting the output power, the feedback control system connected to the impedance measuring circuit and connected to the output stage for cyclically changing the output power in response to the measure to cause the variable impedance to cyclically rise and fall.

9. A method for automatically controlling electrosurgical output power across a load, the load having a variable impedance, the method comprising the steps of:

generating electrosurgical output power, the output power having an RMS value;

connecting the output power across the load;

producing a measure of the variable impedance;

controlling the output power in response to the measure by cyclically raising and lowering the RMS value at a frequency wherein the measure follows the RMS value.

10. The method of claim 9 wherein the frequency is in the range of one to twenty hertz.

11. The method of claim 9 wherein the output power is comprised of an output voltage, the method further comprising the step of:

raising and lowering the RMS value by raising and lowering the output voltage.

12. The method of claim 11 further comprising the step of raising and lowering the output voltage in a range between zero volts and 150 volts.

13. The method of claim 9 further comprising the step of terminating the output power when the variable impedance rises above a threshold.

14. The method of claim 9 further comprising the step of terminating the output power after a preset period of time.

15. A method for automatically controlling output power from an electrosurgical generator across a load, the load having a variable impedance, the load having a thermal bandwidth, the method comprising the steps of:

generating electrosurgical output power, the output power having an RMS value;

connecting the output power across the load;

producing a measure of the variable impedance;

controlling the output power by repeatedly raising and lowering the RMS value in response to the measure, the raising and lowering occurring repeatedly with a frequency, wherein the frequency is within the thermal bandwidth.

ELECTROSURGICAL GENERATOR WITH ADAPTIVE POWER CONTROL

An electrosurgical generator has an output power control system that causes the impedance of tissue to rise and fall in a cyclic pattern until the tissue is desiccated. The advantage of the power control system is that thermal spread and charring are reduced. In addition, the power control system offers improved performance for electrosurgical vessel sealing and tissue welding. The output power is applied cyclically by a control system with tissue impedance feedback. The impedance of the tissue follows the cyclic pattern of the output power several times, depending on the state of the tissue, until the tissue becomes fully desiccated. High power is applied to cause the tissue to reach a high impedance, and then the power is reduced to allow the impedance to fall. Thermal energy is allowed to dissipate during the low power cycle. The control system is adaptive to tissue in the sense that output power is modulated in response to the impedance of the tissue.